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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,490	08/25/2006	Henry Azima	085874-0459	6294
22428 7590 09/05/2008 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER ROBINSON, RYAN C	
			ART UNIT 2615	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/584,490

**Applicant(s)**

AZIMA ET AL.

**Examiner**

RYAN C. ROBINSON

**Art Unit**

2615

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 6/22/2006

### **DETAILED ACTION**

1. The examiner acknowledges the preliminary amendments filed on 6/22/2006.
2. Claims 6-10, 12, 19-23, 25 and 27 have been amended on 6/22/2008.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. Figures 1-5 are missing. 37 CFR 1.83(b) reads as follows:

When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 24 recites the limitation "wherein the vibration exciter is coupled to the return lip", suggesting that the exciter is normal to the panel as shown in Fig. 11. However claim 24 is dependent upon claim 23, which asserts that the exciter applies force in the plane of the panel, and therefore would require the exciter to be parallel to the plane of the panel.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**6. Claims 1-4, 8-9, 12-17, 21, 23 and 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Graetz, US Publication No. 2004/0240687 filed on 5/30/2003, (hereby Graetz).**

7. As to claim 1, Graetz teaches a method of making a bending wave panel loudspeaker (Fig. 11), comprising rigidly coupling a lever (117B) to a panel (114) edge or marginal portion such that the lever extends at an angle to the plane of the panel (Para. 0016, lines 2-3), coupling a bending wave exciter (116B) to the lever (117B) whereby bending wave energy is coupled to the panel to provide an acoustic output when the exciter is fed with a signal (Para. 0024, lines 1-5) and supporting the panel on a suspension (113B) positioned outboard of the lever.

8. As to claim 2, Graetz teaches arranging the lever (117B) to be in the form of a flange extending along the panel (114) edge or along a marginal portion of the panel.

9. As to claim 3, Graetz teaches arranging the flange (117B), to extend part-way along the panel (114) edge or marginal portion or to be co-extensive with the panel edge.

10. As to claim 4, with respect to claims 1-3 Graetz teaches arranging levers or flanges (117A, 117B) on a pair of opposite edges or marginal portions of the panel

(114), and coupling each lever or flange to a vibration exciter (116A, 116B) whereby the bending wave panel can be operated as a stereo device.

11. As to claim 8, with respect to claims 1-3, Graetz teaches positioning the exciter (Fig. 7, element 71B) inboard of the lever or flanges (72B).

12. As to claim 9, with respect to claims 1-3, Graetz teaches applying force to the lever or flange (72B) via the vibration exciter (71B) generally in the plane of the panel. The output surface of the exciter (71B) points in a direction in the plane of the panel (73).

13. As to claims 12 and 13, with respect to claims 1-3, Graetz teaches that the bending wave panel (73) is driven into resonance by the exciter (71B), and the resonance is of a distributed mode kind. Since the speaker is operating in distributed mode (Para. 0024, lines 3-5), the bending wave panel is inherently driven into resonance.

14. As to claim 14, Graetz teaches a bending wave panel-form loudspeaker (Fig. 11) having a lever (117) rigidly coupled to a marginal portion or edge of the panel (114), a vibration exciter (116B) coupled to the lever to apply bending wave energy to the panel to produce an acoustic output (Para. 0024, lines 1-5), and a panel suspension (113B) positioned outboard of the lever.

15. As to claim 15, Graetz teaches that the lever (117B) is in the form of a flange extending along the panel edge or along a marginal portion of the panel (114).

16. As to claim 16, Graetz teaches that the flange (117B) extends part-way along the panel edge or marginal portion or is co-extensive with the panel edge (114).

17. As to claim 17, with respect to claims 14-16, Graetz teaches that levers or flanges (117A, 117B) are provided on a pair of opposite edges or marginal portions of the panel (114), each lever or flange being coupled to a vibration exciter (116A, 116B), whereby the loudspeaker may be operated as a stereo device.

18. As to claim 21, with respect to claims 14-16, Graetz teaches that the vibration exciter (Fig. 7, element 71B) inboard of the lever or flange.

19. As to claim 23, with respect to claims 14-16, Graetz teaches that the vibration exciter (71B) is adapted to apply force to the lever or flange (72B) generally in the plane of the panel (73). The output surface of the exciter (71B) points in a direction in the plane of the panel (73).

20. As to claim 25 and 26, with respect to claims 14-16, Graetz teaches that the bending wave panel is adapted to be resonant to produce an acoustic output, and the

bending wave panel is of the distributed mode kind. Since the speaker is operating in distributed mode (Para. 0024, lines 3-5), the bending wave panel is inherently driven into resonance.

***Claim Rejections - 35 USC § 103***

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**22. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graetz, US Publication No. 2004/0240687 filed on 5/30/2003, (hereby Graetz), as applied to claims 1-4 above.**

23. As to claim 5, with respect to claim 4, Graetz teaches arranging a lever or flange on an adjacent edge or marginal portion of the panel, and coupling a vibration exciter to the lever or flange on the adjacent edge or marginal portion to provide a multiple channel acoustic output (Para. 0027, lines 1-4). Graetz teaches that any number of exciters and brackets can be used. Therefore it would be obvious to one of ordinary skill in the art to add additional exciters and levers or flanges on adjacent edges of the panel for the purpose of adding multiple channels of acoustic output.



24. As to claim 6, with respect to claims 1-3, Graetz may not explicitly teach driving the lever or the flange into resonance by the associated vibration exciter. However Graetz does teach that the bracket should be optimized for efficient energy transfer from the exciter (Para. 0025 Lines 5-9), and one of ordinary skill would realize that driving the lever or flange into resonance is an ideal optimization for energy transfer.

25. As to claim 7, with respect to claim 6, Graetz teaches selecting a distributed mode device as a vibration exciter (Para. 0026, lines 1-6).

26. As to claim 18, with respect to claims 14-16, Graetz teaches that a lever or flange is provided on an adjacent edge or marginal portion of the panel, the lever or flange on the adjacent edge or marginal portion being coupled to a vibration exciter to provide a multiple channel acoustic output (Para. 0027, lines 1-4). Graetz teaches that any number of exciters and brackets can be used. Therefore it would be obvious to one of ordinary skill in the art to add additional exciters and levers or flanges on adjacent edges of the panel for the purpose of adding multiple channels of acoustic output.

27. As to claim 19, with respect to claims 14-16, Graetz may not explicitly teach driving the lever or the flange into resonance by the associated vibration exciter. However Graetz does teach that the bracket should be optimized for efficient energy transfer from the exciter (Para. 0025 Lines 5-9), and one of ordinary skill would realize

that driving the lever or flange into resonance is an ideal optimization for energy transfer.

28. As to claim 20, with respect to claim 19, Graetz teaches that the vibration exciter is a distributed mode device.

29. As to claim 27, with respect to claims 1-3, Graetz teaches that the loudspeaker (Fig. 5) can be used with a display screen (Para. 0028, lines 15-17), wherein the transparent protective cover is a loudspeaker. Graetz also discloses that the panel area can be as small as 0.001 square meters (Para. 0022, lines 4-5), which would be suitable for use in a small electronic device.

30. As to claim 28, with respect to claim 27, examiner takes official notice that mobile telephones, and PDA's are all well known devices that incorporate a display screen, and further capable of integrating a loudspeaker as taught by Graetz.

**31. Claims 1-3, 10-11, 14-16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bank et al., US Publication No 2001/0033669, published on 10/25/2001, in view of Azima et al, US Patent No. 6,332,029, published on 12/18/2001.**

32. As to claim 1, Bank discloses a method of making a bending wave panel loudspeaker (Fig. 19), comprising coupling a lever (120) to a panel (116) edge or marginal portion (Para. 0131, lines 5-7) such that the lever (120) extends at an angle. The lever is normal to the panel (116), coupling a bending wave exciter (115) to the lever (120), whereby bending wave energy is coupled to the panel (116) to provide and acoustic output when the exciter (115) is fed with a signal (122). Bank is silent as to how the panel is supported, as Bank's disclosure is directed to how the exciter is coupled to the panel. However, suspending the panel of a bending wave speaker on a suspension is well known in the art.

Azima teaches a suspension (Fig. 5b, element 17) used for the purpose of supporting the speaker in an enclosure (Col. 27, lines 59-61). The suspension is on the peripheral edge of the panel (2). Therefore it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate a suspension positioned outboard of the lever, in the speaker of Bank, in order to allow the speaker to be placed in a housing.

33. As to claims 2 and 3, Bank teaches arranging the lever to be in the form of a flange extending along the panel edge or along the marginal portion of the panel, as well as extending part-way along the panel edge or marginal portion or to be co-extensive with the panel edge. (Para. 0037, lines 3-4). Bank suggests that the mount (120), which corresponds to the lever or flange, can comprise a line of attachment.

34. As to claim 10, with respect to claims 1-3, Bank teaches applying force to the lever or flange (120) via the vibration exciter (115) generally normal to the plane of the panel (116). The output surface of the transducer is parallel with the panel, therefore the force applied is normal to the plane of the panel.

35. As to claim 11, with respect to claim 10, Bank teaches providing the lever or flange (120) with a return lip (118) at its end remote from the panel (116) and coupling the vibration exciter (115) to the return lip (115).

36. As to claim 14, Bank teaches a bending wave panel-form loudspeaker (Fig. 19) having a lever (120) rigidly coupled to a marginal portion or edge of the panel (116), a vibration exciter (115) coupled to the lever to apply bending wave energy to the panel (116) to produce an acoustic output. Bank is silent as to how the panel is supported, as Bank's disclosure is directed to how the exciter is coupled to the panel. However, suspending the panel of a bending wave speaker on a suspension is well known in the art.

Azima teaches a suspension (Fig. 5b, element 17) used for the purpose of supporting the speaker in an enclosure (Col. 27, lines 59-61). The suspension is on the peripheral edge of the panel (2). Therefore it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate a suspension positioned outboard of the lever, in the speaker of Bank, in order to allow the speaker to be placed in a housing.

37. As to claims 15 and 16, Bank teaches that the lever is in the form of a flange extending along the panel edge or along the marginal portion of the panel, as well as extending part-way along the panel edge or marginal portion or to be co-extensive with the panel edge. (Para. 0037, lines 3-4). Bank suggests that the mount (120), which corresponds to the lever or flange, can comprise a line of attachment.

38. As to claim 22, with respect to claims 14-16, Bank teaches applying force to the lever or flange (120) via the vibration exciter (115) generally normal to the plane of the panel (116). The output surface of the transducer is parallel with the panel. Therefore, the force applied is normal to the plane of the panel.

### ***Conclusion***

The prior art made of record

- |    |                       |                     |
|----|-----------------------|---------------------|
| a. | US Publication Number | <b>2004/0240687</b> |
| b. | US Publication Number | <b>2001/0033669</b> |
| c. | US Patent No.         | <b>6,332,029</b>    |

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan C. Robinson whose telephone number is (571) 270-3956. The examiner can normally be reached on Monday through Friday from 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Suhan Ni, can be reached on (571) 272-7505. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan Robinson

/Suhan Ni/  
Primary Examiner, Art Unit 2614